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ANTI-TAMPER DEVICE**Field of the invention**

This invention relates to devices for use in preventing the removal of or tampering with a construction fitting. The term construction fitting, as used herein, means a fitting for location around one or more construction elements for connection purposes. The construction elements are, in particular, rod or pole-like elements which are for connection together or for connection to other items.

Background of the invention

10 An example of a construction fitting is a scaffold fitting which has two hinged together components which can be located about a scaffold tube. A bolt is held captive by one of the parts of the fitting and may be manoeuvred into a gate in the other part of the fitting and then held in place by means of a nut, typically a hexagonal shaped nut, for instance a 7/16" or 1/2" Whitworth size nut.

15 Such nuts can be easily undone by a spanner or wrench which are readily available to any person. Unauthorised removal/tampering with scaffold fittings is a major and hazardous problem in the industry and could have catastrophic results. Scaffolding invariably includes items such as tie members, braces and anchorage points all of which are secured with scaffold fittings (also known as clamps) upon which the security, stability and safety of the scaffolding depends.

25 A further example of a construction fitting is a clip used to secure temporary fencing commonly used around building sites. This fencing, known as Harris fencing, comprises galvanised steel panels having a tubular frame, the tubes being secured in heavy concrete blocks and secured together with a clamp or parallel coupler comprising two pressed steel pieces interconnected with a nut and bolt fastener.

30 Such construction fittings are susceptible to removal by undoing the nut thereby releasing the fitting from the construction element(s) to which it is attached.

Statements of the invention

According to the present invention there is provided a device for preventing the removal of or tampering with a construction fitting having two construction element engaging components interconnected by a fastener, said fastener comprising a bolt
5 extending between said components and a nut for tightening on said bolt rigidly to interconnect said components with a gap therebetween, said device comprising a body portion for at least partly covering said nut, preventing access thereto by an unfastening tool, said body portion then extending from said nut to a position alongside said bolt within said gap, said device further including locking means
10 movable relative to the body portion between a first position in which the device may be removed from the fitting and a second position when such removal is prevented, said locking means extending, in its second position from said body portion in a direction towards said bolt with said gap.

15 Preferably said locking means is movable within a bore provided in said body portion. The locking means may be, for example, a screw-threaded element or a pin lockable to the body portion in its second position.

Preferably the locking means is arranged so that access thereto to effect said
20 movement requires a suitably sized and shaped tool.

Preferably said locking means and said tool are provided with respective key and keyhole elements which must be engaged in order to move said locking means from the second to the first position.

25 Preferably the body portion surrounds, in use, essentially all of the otherwise exposed surfaces of the nut of the fitting, said body portion including a bore through which the free end of the bolt extends.

30 Preferably the body portion and locking means are made of metal.

Examples of construction fittings to which the device of the invention may be applied are scaffold fittings and fittings forming part of temporary fencing.

Brief description of the drawings

5 The accompanying drawings are as follows:

Figure 1A is a side view of a scaffold fitting secured to a scaffold tube;

Figure 1B is a similar view on another type of scaffold fitting;

Figure 1C is a view on arrow B of Figure 1B;

Figure 1D is a top plan view of the fitting and tube of Figure 1C;

10 Figure 1E shows the fitting of Figure 1A without the tube and without the bolt located in place;

Figure 2A is a first perspective view of a device in accordance to the present invention;

Figure 2B is a second perspective view of the device of Figure 2A;

15 Figure 2C is a third perspective view of the device of Figure 2A;

Figure 3A shows the device of Figure 2A being moved into position relative to a scaffold fitting;

Figure 3B shows the device of Figure 2A located in position on a scaffold fitting;

20 Figure 3C is a further view of the device of Figure 2A located in position relative to a scaffold fitting;

Figure 4 shows examples of designs of the heads of tools for use with a device of the invention;

25 Figure 5 shows a further embodiment of a device in accordance with the present invention and being used in connection with temporary fencing;

Figure 6 is a front view of the device of Figure 5 and showing the device in position; and

Figure 7 is a top view of the arrangement shown in Figure 6.

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Detailed Description of the Invention

The invention will now be described, by way of examples only, and with reference to the accompanying drawings.

- 5 Referring to Figures 1A to 1E, a scaffold fitting 1, which may be in the form, for instance, of that shown in Figure 1A or Figure 1B, is shown secured to a scaffold tube 3. The fitting includes hinged together components 5 and 7 and a bolt 9, the head of which is held captive in component 5 and the free end of which may be positioned between the bifurcated arms of components 7 which form the gate 11.
- 10 When so positioned, a hexagonal nut 13 may be screwed in the direction towards the head of bolt 9 until it is tight against component 7 thereby holding the fitting firmly in place on tube 3.

- It will be appreciated that the above described fitting can be easily loosened or removed from tube 3 simply by applying an appropriate tool, such as a spanner, to the hexagonal nut 3.
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- Referring to Figures 2A to 2C, device in accordance with the present invention is a single part construction, normally made of hard metal (or any other hard material) which has two functional components. The first component is a domed head member 20 21 in which a short, hollow cylindrical section 23 is provided at one end with an integral curved cap 25 having a central bore 27 extending therethrough into communication with the hollow interior of cylindrical section 23.

- 25 Extending from cylindrical section 23 is a longitudinally extending leg or wing 29 which is provided with a radial screw threaded bore 31. Located within bore 31 is a grub screw 33 having an outer end provided with a specially shaped "keyhole" such as one of those illustrated in Figure 4. A corresponding tool (not shown) is required with a "key" shape to correspond to the keyhole configuration of grub screw 33.

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Referring to Figures 3A and 3B of the accompanying drawings, a device 35 in accordance to the present invention is applied to a scaffold fitting 37 which in turn is located around scaffold tube 39. In order to apply device 35, it is slid over nut 41 by moving it relative to fitting 37 as indicated by the arrow in Figure 3A. This movement is continued until the free end of bolt 43 is positioned as shown in Figure 3B extending through bore 45 of the device and with the hexagonal nut 47 located within the relatively enlarged space defined by cylindrical section 49 of the device. With the device in this position the wing 51 extends across the end of part 37 of the scaffold fitting (not shown in Figure 3B). Applying the special tool to the outer end of grub screw 53 enables this screw to be moved into engagement with bolt 43, as indicated in Figure 3B. When grub screw 53 is tightened against bolt 43, the device cannot be removed and the hexagonal nut 47 is no longer accessible, thereby preventing any unauthorised tampering.

Referring to Figures 5 to 7 of the accompanying drawings, a further embodiment of the device in accordance with the present invention is for use in connection with temporary fencing, known as Harris fencing. This fencing includes galvanised steel panels (61) having tubular side-frame members 63 which may be interconnected by means of a clamp or parallel coupler 65. Clamp 65 comprises two pressed steel members 67 interconnected by means of a bolt 69 and a nut 71. When securely in place there is a gap 73 between the elements 67.

The second embodiment of the device of the present invention includes a body portion 73 having a first part 75 for location over nut 71 and a second part, extending from first part 75 and provided with a screw-threaded bore 79. Thus, the device 73 is broadly similar to that described above with reference to Figures 2 and 3.

The device includes a grub screw 81 having an outer end provided with a specially shaped "keyhole" such as one of those illustrated in Figure 4. A corresponding tool (not shown), provided with a corresponding "key" shape, is used to engage the grub screw 81 and effect movement thereof within bore 79.

In use the device of the invention is positioned as indicated in Figures 6 and 7 with portion 75 surrounding nut 71 and portion 77 extending over or under member 67 to a position whereby bore 79 is adjacent the shank of bolt 69 within gap 73. In this position the grub screw may then be turned, using the appropriate tool, until it engages the shank of bolt 69. In this position the device of the invention cannot be removed since the nut 71 is not accessible to an unfastening tool.

It should be appreciated that the threaded bore and grub screw arrangements described above may be replaced by a locking pin movable within a bore in the body portion of the device and operated by key between a locking and an unlocking position.

As indicated above, a device in accordance with the present invention may be made from a hard metal, examples being steel, tool steel, stainless steel or indeed any other appropriate material.

A device in accordance to the present invention can be made clearly visible and it may, for instance, be brightly coloured and/or coated with a reflective material. Visibility is particularly important when there is a "duty of care" to ensure that unauthorised or forced removal will be readily noticed by a safety officer or any other appropriate person.

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